



UNITED STATES DEPARTMENT OF COMMERCE  
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ASAHINA

PC-8811 A

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LUKE, S

258

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11/20/89

☒ This application has been examined ☒ Responsive to communication filed on 9/1/89 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), ~~days~~ from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892.        | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948.                   |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.             | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/>  |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-22 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-22 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on \_\_\_\_\_, has been ☐ approved. ☐ disapproved (see explanation).
12. ☒ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☒ been received ☐ not been received  
☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Art Unit 258

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1-6, 7, 10, 13 and 20, as now amended, are rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Howard.

McDavid discloses a wiring structure [14] in Figure 1.

Howard discloses a metal (Al-Cu) conductive layer formed above a nitride layer and an additional nitride layer formed above the metal layer (Al-Cu).

It would have been obvious to have the Howard wire structure used in the wire structure of McDavid because it is able to avoid the formation of cracks. It is just another method to prevent void (crack) beside electroplating or electrolessly plating.

Claims 8 and 9 are still rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Howard.

These claims are still rejected under the first rejection, paper number 9.

Claim 11 is rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Howard, further in view of Baudrant et al as set forth in the first rejection, paper number 9.

Claims 12 and 17 are rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Howard, then further in view of Sasaki as set forth by the reason in the first rejection, paper number 9.

Claims 15 and 16 are rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Sasaki, further in view of Howard as set forth by the reason in the first rejection, paper number 9.

Claims 14, 18 and 19 are rejected under 35 U.S.C. 103 as being unpatentable over McDavid in view of Howard, further in view of Brasen as set forth by the reason in the first rejection, paper number 9.

Claims 5-7, 10, 13 and 22 are still rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

They are still rejected under the reason as set forth in the first rejection, paper number 9.

Claims 21 and 22 are rejected under 35 U.S.C. 103 as being unpatentable over Sasaki in view of Howard.

Sasaki discloses a wiring structure in Figure 1.

Howard discloses a wiring structure to prevent voids (cracks) formation. It would have been obvious to have the wiring structure of Howard used in Sasaki because a wiring structure without crack would improve the electrical conductivity of the wiring structure and the circuit.

It is argued, page 2 and 3, 4 of the Remarks, that the electroplated or electrolessly plated metal plating layer disposed on the upper portion of the upper structure is physically important to the device because it will avoid projection and voids formed in the plating layers [109 and 113] due to stress (P,13, lines 3-4 in the specification). However, it is believed that different methods can be used to avoid the formation of void in a conductive structure, e.g., the prior art disclosed by Howard.

Since the electroplated or electrolessly plated method is just one of the several methods to avoid voids (cracks) in a conductive layer, the product-by-process claims (1 and 21) as amended by the applicant is no longer considered and the limitations of this process cannot be construed as structural limitation. Therefore, all the dependent claims are rejected based on the above reason. Therefore, any method can be used in the McDavid or Sasaki reference as long as the method produced the exact same physical structure claimed by the applicant.

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In page 5 applicant urged that the Howard publication cannot be used to produce a physical structure (no voids in metal layer) that can only be produced by electroplating. It is not true because Howard also suggested a method to produce conductive plating layer without voids or projection. Therefore, electroplating or electroless plating is not the only method to process a plating layer.

Therefore, based on the above reason, the reference of Howard, Baudrant et al, Sasaki and Brasen can still be applied in the rejection. The combination Howard and Baudrant et al or Howard and Brasen et al would produce a structure similar to the applicant.

Applicant's arguments filed September 1, 1989 have been fully considered but they are not deemed to be persuasive.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The practice of automatically extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection has been discontinued by the Office. See 1021 TMOG 35.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE (3) MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO (2) MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE (3) MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX (6) MONTHS FROM THE DATE OF THIS FINAL ACTION.

Serial No. 151,361

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Any inquiry concerning this communication should be directed to Examiner Loke at telephone number 703-557-9530.

Loke/mjg  
(703) 557-9530  
Nov. 11, 1989

*H.L.*

*Rolf Hille*  
**ROLF HILLE**  
**SUPERVISORY PATENT EXAMINER**  
**ART UNIT 258**